PAIN MANAGEMENT
September 2003

Anonymous. "Morphine/dextromethorphan--Endo: E 3231, Morphidex." *Drugs in R & D.* 4, no. 1(2003): 55-6 UI 12568639.

Ashby, M. E., and C. Dowding. "Hospice care and patients' pain: communication between patients, relatives, nurses and doctors." *International Journal of Palliative Nursing.* 7, no. 2(2001): 58-67 UI 12271251.

This article describes a study that sought to assess how patients, relatives, doctors and nurses in a palliative care unit viewed pain and pain management, and how standards and expectations for pain relief can be raised by upholding statements of care and agreed partnership values. The results showed that research-based pain management enables the provision of pain control that is acceptable to patients, relatives, doctors and nurses. By valuing patient-centred care, where assessment tools assist communication and information sharing, a partnership of care is established in which patient and professional autonomy are recognized and respected, international recommendations for pain relief are practised and professional codes of conduct upheld. Good pain management requires accurate assessment that is best achieved by open and honest discussion in a supportive environment. Hospices provide specialist symptom control aimed at improving quality of life for patients with advanced disease. They are not only an ideal setting to provide evidence for practice, but also a learning environment for specialist understanding of symptom control and a resource base for other professionals.

Bledsoe, B. E., and J. Myers. "Future trends in prehospital pain management." *Journal of Emergency Medical Services.* 28, no. 6(2003): 68-71 UI 12792595.

Bolognese, J. A., T. J. Schnitzer, and E. W. Ehrich. "Response relationship of VAS and Likert scales in osteoarthritis efficacy measurement." *Osteoarthritis & Cartilage.* 11, no. 7(2003): 499-507 UI 12814613.

OBJECTIVE/BACKGROUND: Efficacy in osteoarthritis (OA) is principally measured using subjective visual analogue (VAS) and/or Likert scale responses. The relationship between these two scales and their relative precision in discriminating active from placebo treatment in OA patients was determined. DESIGN/METHODS: Patient overall pain assessment, and patient and investigator global assessments were each measured on a 100mm VAS and on a 0 to 4 point Likert scale in a 6-week OA study of rofecoxib vs placebo. The relationship between the VAS and Likert responses was examined graphically and via summary statistics. Analysis of variance was used to assess consistency of the VAS/Likert relationship over time and across the different endpoints. Precision was compared using effect size, and normality of VAS scale of measurement was assessed using the Shapiro-Wilk test. RESULTS: Mean VAS scores and changes from baseline at individual time points were generally

highly correlated with corresponding Likert responses (r-values generally approximately 0.7-0.8). The magnitude of VAS values and changes varied depending on endpoint, on the associated magnitude of increment of Likert score, and on the Likert baseline value (i.e., where on the Likert scale the change was occurring). Precision of VAS and Likert responses to detect difference between treatments was generally similar with effect sizes approximately 1. Normality and homogeneity of variance of VAS scores was most closely approximated by actual changes in comparison to percent change or log-transformed measures. CONCLUSIONS: VAS and Likert responses are highly correlated and yield similar precision for discriminating treatments in OA patients. Since Likert responses are easier to administer and interpret, they may be preferable to measure OA response.

Branch, S. M. "Motion--pancreatic endoscopy is useful for the pain of chronic pancreatitis: arguments for the motion.[comment]." *Canadian Journal of Gastroenterology.* 17, no. 1(2003): 57-9 UI 12560857.

Pain is the dominant clinical problem in patients with chronic pancreatitis. It can be due to pseudocysts, as well as strictures and stones in the pancreatic ducts. Most experts agree that obstruction could cause increased pressure within the main pancreatic duct or its branches, resulting in pain. Endoscopic therapy aims to alleviate pain by reducing the pressure within the ductal system and draining pseudocysts. Approaches vary according to the specific nature of the problem, and include transgastric, transduodenal and transpapillary stenting and drainage. Additional techniques for the removal of stones from the pancreatic duct include extracorporeal shockwave lithotripsy. Success rates for stone extraction and stenting of strictures are high in specialized centres that employ experienced endoscopists, but pain often recurs during long term follow-up. Complications include pancreatitis, bleeding, infection and perforation. In the case of pancreatic pseudocysts, percutaneous or even surgical drainage should be considered if septae or large amounts of debris are present within the lesion. This article describes the techniques, indications and results of endoscopic therapy of pancreatic lesions.

Canadian Task Force on Preventive Health, C. "Use of back belts to prevent occupational low-back pain. Recommendation statement from the Canadian Task Force on Preventive Health Care." *CMAJ Canadian Medical Association Journal.* 169, no. 3(2003): 213-4 UI 12900481.

Christmas, T. J. "Does pericapsular lignocaine reduce pain during transrectal ultrasonography-guided biopsy of the prostate?[comment]." *BJU International.* 92, no. 1(2003): 154-5 UI 12823409.

Conwell, D. L. "Motion--pancreatic endoscopy is useful for the pain of chronic pancreatitis: arguments against the motion.[comment]." *Canadian Journal of Gastroenterology.* 17, no. 1(2003): 61-3 UI 12560858.

Endoscopic therapy can be used to dilate strictures in the pancreatic duct, remove stones and drain pseudocysts. In addition, it provides an alternative to surgery for the management of pain in patients with chronic pancreatitis. Pain is a difficult problem in these patients, especially if substance abuse is present, and its medical management is generally unsatisfactory. The concept that pancreatic pain is related to increased pressure in the main pancreatic duct is unproven, and is not supported by the results of surgical intervention. Although pancreatic stenting is often technically successful at achieving drainage of the pancreatic duct and relieving pain over the short term, pain usually recurs with time, complications are frequent, and repeated stent changes are usually necessary. Pancreatic pseudocysts can be drained endoscopically, using transpapillary, cystogastrostomy or cystoduodenostomy approaches, but success rates are less than 50% and bleeding is

a major complication. Pseudocysts should not be drained unless they are symptomatic, causing complications or enlarging. There have been no published studies comparing endoscopic with surgical or radiological modalities. Endoscopic therapy of pancreatic disorders is a new and interesting technique, but initial promising results need to be confirmed in large, well-designed clinical trials. Such studies would need to enrol large numbers of patients, and involve measurement of technical success, pain severity and quality of life parameters. At present, endoscopic techniques must be considered experimental.

Cork, R. C., et al. "A survey of the adequacy of pain management in end-stage cancer patients." *Journal of the Louisiana State Medical Society.* 155, no. 3(2003): 150-3 UI 12873101.

Davis, T. T., et al. "Lumbar intervertebral thermal therapies." *Orthopedic Clinics of North America.* 34, no. 2(2003): 255-62, vi UI 12914265.

In hopes of improving outcomes for patients with discogenic pain, less invasive techniques that reduce trauma and shorten the recovery period have been developed. This article attempts to present a comprehensive description of minimally invasive techniques, specifically heat treatments, for lumbar disc disease. The goal is to inform and educate the reader on the various thermal therapies available for lumbar disc disease by evaluating the scientific data in an objective manner. [References: 71]

De Kock, M. "Improving pain management." *Middle East Journal of Anesthesiology.* 17, no. 1(2003): 113-8 UI 12754776.

Dell, D. D. "Control of pain after breast reconstruction procedure." *Clinical Journal of Oncology Nursing.* 7, no. 3(2003): 335-6, 338 UI 12793343.

Duncan, D. G. "On the use and abuse of double effect." *The National Catholic Bioethics Quarterly.* 1, no. 3(2001): 321-5 UI 12866521.

Ferrari, R., and A. S. Russell. "Regional musculoskeletal conditions: neck pain." *Best Practice & Research in Clinical Rheumatology.* 17, no. 1(2003): 57-70 UI 12659821.

Neck pain is second only to low back pain as the most common musculoskeletal disorder in population surveys and primary care, and, like low back pain, it poses a significant health and economic burden, being a frequent source of disability. While most individuals with acute neck pain do not seek health care, those that do account for a disproportionate amount of health care costs. Furthermore, in the setting of the whiplash syndrome, neck pain accounts for significant costs to society in terms of insurance and litigation, and days lost from work. Much neck pain is not attributable to a specific disease or disorder and is labelled as 'soft-tissue' rheumatism or muscular/mechanical/postural neck pain. Most chronic neck pain is attributed to whiplash injury, another enigmatic diagnosis. Despite decades of research and posturing to explain chronic neck pain on the basis of a specific disease or injury, and despite increasingly sophisticated radiological assessment, little advance has been made in either achieving a specific structural diagnosis or, more importantly, in reducing the health and economic burden of chronic neck pain. There is some evidence, however, that measures which address the psychosocial factors that promote pain chronicity, and shift the patient's view away from injury and disease to more benign perspectives on their condition, may be helpful. This chapter considers briefly the magnitude of the neck pain problem, our limitations in understanding it from a traditional medical perspective, and suggestions for therapeutic and societal approaches that appear more likely to be helpful. [References: 47]

Flor, H. "Phantom-limb pain: characteristics, causes, and treatment." *Lancet. Neurology.* 1, no. 3(2002): 182-9 UI 12849487.

Phantom-limb pain is a common sequela of amputation, occurring in up to 80% of people who undergo the procedure. It must be differentiated from non-painful phantom phenomena, residual-limb pain, and non-painful residual-limb phenomena. Central changes seem to be a major determinant of phantom-limb pain; however, peripheral and psychological factors may contribute to it. A comprehensive model of phantom-limb pain is presented that assigns major roles to pain occurring before the amputation and to central as well as peripheral changes related to it. So far, few mechanism-based treatments for phantom-limb pain have been proposed. Most published reports are based on anecdotal evidence. Interventions targeting central changes seem promising. The prevention of phantom-limb pain by peripheral analgesia has not yielded consistent results. Additional measures that reverse or prevent the formation of central memory processes might be more effective. [References: 80]

Foster, N. E., et al. "Treatment and the process of care in musculoskeletal conditions. A multidisciplinary perspective and integration." *Orthopedic Clinics of North America.* 34, no. 2(2003): 239-44 UI 12914263.

Chronic musculoskeletal pain for which there is not an obvious underlying physical cause is one of the most common reasons for long-term disability. There is a need to develop better ways of managing these problems. Improving the understanding of the basis for decision making, the processes of care, and the beliefs and expectations of patients and health care professionals seems as fundamental as basic laboratory science is to understanding inflammatory arthopathies. Little is known about the beliefs and expectations of patients and health care professionals, nor the multitude of factors such as traditions within professional groups, education, and language that professionals use in decision making. When better understanding of these factors and the mismatch between professionals and patients is achieved, then theoretical frameworks, treatment approaches, and the education of professionals in appropriate management will be improved. [References: 59]

Graff-Radford, S. B. "Current concepts in chronic pain management." *Journal of the California Dental Association.* 31, no. 5(2003): 428-33 UI 12839236.

The majority of people afflicted with orofacial pain have acute pain that resolves quickly, but some are left with chronic and disabling pain. Therapy must be provided to deal with the nociception, behavior, and suffering. Appropriate behavioral evaluation may be required prior to developing a treatment plan. The treatment should then be carefully outlined and presented in a treatment-planning visit and may include physical, pharmacologic, and behavioral aspects.

Griffie, J. "Addressing inadequate pain relief." *AJN, American Journal of Nursing.* 103, no. 8(2003): 61-3 UI 12904726.

Gwinn, E. "Nurses' back pain." *AJN, American Journal of Nursing.* 103, no. 7(2003): 13 UI 12865636.

Hamburger, M. I., et al. "Intra-articular hyaluronans: a review of product-specific safety profiles." *Seminars in Arthritis & Rheumatism.* 32, no. 5(2003): 296-309 UI 12701040.

BACKGROUND AND OBJECTIVES: Intra-articular (IA) hyaluronans (HAs) are indicated for pain relief of osteoarthritis (OA) of the knee. Hyalgan (sodium hyaluronate), Supartz (sodium hyaluronate), and Synvisc (hylan G-F 20) are Food and Drug Administration-approved HA products. They are derived from rooster

combs; Hyalgan and Supartz are naturally derived (unmodified); Synvisc is chemically modified to increase its molecular weight. This article reviews and updates the safety data for IA HAs used for the treatment of knee OA. METHODS: References were taken from Medline through July 2002; respective product information services and information from the searchable United States Food and Drug Administration Manufacturer and User Facility Device Experience Database also were used. RESULTS: All products demonstrated favorable safety profiles in clinical trials and practice compared to other standard therapies for management of OA knee pain. The most common adverse event associated with HAs is mild injection site pain and swelling. Each product has had rare reports of pseudogout and anaphylactoid reactions. Product-specific adverse events, severe acute inflammatory reactions (pseudoseptic knee), in patients receiving Synvisc have been reported. One such patient developed antibodies to chicken proteins and hylan, suggesting an immunologic basis for the severe acute inflammatory reaction. Data from an animal study support a possible immunogenic difference between Synvisc and Hyalgan. CONCLUSIONS AND RELEVANCE: Overall, HA therapy is a safe treatment for OA knee pain, although there may be interproduct variability in safety profiles. [References: 51]

Harrison, S., et al. "General practitioners' uptake of clinical practice guidelines: a qualitative study." *Journal of Health Services & Research Policy.* 8, no. 3(2003): 149-53 UI 12869340.

OBJECTIVE: To explain recent rapid audited change in the uptake of locally implemented, evidence-based clinical guidelines for asthma and angina in primary care. METHODS: A case study of primary care in two matched, adjacent districts in Northern England, focusing on a stratified random sample of 49 general practitioners (GPs) from eight primary care groups. Data were collected from three cycles of mainly qualitative interviews carried out at six-monthly intervals, before and after the dissemination of local guidelines and after audit data were gathered. Interviews examined attitudes, awareness and impact of locally disseminated asthma and angina guidelines and the subsequent audit. Audit data on guideline uptake were also available from a parallel study. RESULTS: The rapid increase in guideline uptake observed in both intervention and control groups was not explained by individual practitioners or practice factors. The findings are attributed to GPs' awareness of policies for evidence-based medicine, of new health service institutions and of the clinical governance activities of primary care groups. Behaviour change reflects GPs' decisions about what to record in case notes as well as their clinical decisions, so that findings may reflect changing perceptions about accountability rather than about preferred treatment regimes. CONCLUSIONS: Guideline production and dissemination is best seen in the broader context of policy change. Studies of guideline implementation should report before and after data and incorporate significant qualitative components in order to identify important contextual factors.

Hodges, P. W. "Core stability exercise in chronic low back pain." *Orthopedic Clinics of North America.* 34, no. 2(2003): 245-54 UI 12914264.

In conclusion, core stability exercise is an evolving process, and refinement of the clinical rehabilitation strategies is ongoing. Two major foci are addressed in contemporary core stability programs: motor control and muscle capacity. Both of these factors have considerable foundation in the literature and can be seen as a progression of exercise rather than conflicting approaches. Importantly, the clinical efficacy of these approaches is being realized in clinical trials. Further work is required, however, to refine and validate the approach, particularly with reference to contemporary understanding of the neurobiology of chronic pain. [References: 85]

Hoffmann, D. E., and A. J. Tarzian. "Achieving the right balance in oversight of physician opioid prescribing for pain: the role of state medical boards." *Journal of Law, Medicine & Ethics.* 31, no. 1(2003): 21-40 UI 12762100.

Huynh, M. P., and J. A. Yagiela. "Current concepts in acute pain management." *Journal of the California Dental Association.* 31, no. 5(2003): 419-27 UI 12839235.

Analgesics most commonly prescribed in dentistry for acute pain relief include the nonsteroidal anti-inflammatory drug, acetaminophen, and various opioid-containing analgesic combinations. The NSAIDs and presumably acetaminophen act by inhibiting cyclooxgenase enzymes responsible for the formation of prostaglandins that promote pain and inflammation. Opioids such as codeine, hydrocodone, and oxycodone stimulate endogenous opioid receptors to bring about analgesic and other effects. Numerous clinical studies have confirmed that moderate to severe pain of dental origin is best managed through the use of ibuprofen or another NSAID whose maximum analgesic effect is at least equal to that of standard doses of acetaminophen-opioid combinations. If an NSAID cannot be prescribed because of patient intolerance, analgesic preparations that combine effective doses of an orally active opioid with 600 to 1,000 mg of acetaminophen are preferred in the healthy adult. On occasion, prescribing both an NSAID and an acetaminophen-opioid combination may be helpful in patients not responding to a single product. In all cases, however, the primary analgesic should be taken on a fixed schedule, not on a "prn" (or as needed) basis, which only guarantees the patient will experience pain.

Isaac, R. "Patching up pain." *Nursing.* 33, no. 5(2003): 8 UI 12792561.

Johnson, S. H. "Providing relief to those in pain: a retrospective on the scholarship and impact of the Mayday Project." *Journal of Law, Medicine & Ethics.* 31, no. 1(2003): 15-20 UI 12762099.

Jones, G. E., and I. Machen. "Pre-hospital pain management: the paramedics' perspective." *Accident & Emergency Nursing.* 11, no. 3(2003): 166-72 UI 12804613.

Current research studies regarding pre-hospital pain management focus on the range and efficacy of analgesics available. However, the attitudes and perceptions of paramedics towards patients in pain have not been explored. The aim of this study therefore, was to explore paramedics' perceptions of patients in pain and the paramedics' perspective of pre-hospital pain management. This qualitative exploratory study utilised semi-structured interviews to collect in-depth data from six paramedics working in a UK urban ambulance service. The interviews were audio tape-recorded, transcribed and then analysed using a thematic content analysis framework. The participants described factors which they felt influenced a patient's experience of pain, identifying a cultural difference to exist in pain expression. Patients were not always perceived by the participants to be honest when describing their pain and this was one of several reasons influencing the decision not to administer analgesia. This study has revealed small deficits in knowledge, highlighted where additional training would be of benefit and established areas to explore through further research.

King, M. A., et al. "14-Methoxymetopon, a very potent mu-opioid receptor-selective analgesic with an unusual pharmacological profile." *European Journal of Pharmacology.* 459, no. 2-3(2003): 203-9 UI 12524147.

14-Methoxymetopon is a potent opioid analgesic. When given systemically, it is approximately 500-fold more active than morphine. However, this enhanced potency is markedly increased with either spinal or supraspinal administration, where its

analgesic activity is more than a million-fold greater than morphine. It was mu-opioid receptor selective in binding assays and its analgesia was blocked only by mu-opioid receptor-selective antagonists. Yet, it had a different selectivity profile than either morphine or morphine-6beta-glucuronide. Unlike morphine, 14-methoxymetopon was antagonized by 3-O-methylnaltrexone, it was sensitive to antisense probes targeting exons 1, 2 and 8 of the opioid receptor gene and was inactive both spinally and supraspinally in CXBK mice. Although it retarded gastrointestinal transit, it displayed a ceiling effect with no dose lowering transit by more than 65%, in contrast to the complete inhibition of transit by morphine. These finding demonstrate that 14-methoxymetopon is a highly potent mu-opioid with a pharmacological profile distinct from that of the traditional mu-opioid morphine.

Kumar, S., O. P. Tandon, and R. Mathur. "Pain measurement: a formidable task." *Indian Journal of Physiology & Pharmacology.* 46, no. 4(2002): 396-406 UI 12683215.

Pain is defined as unpleasant sensory and emotional experience, associated with actual or impending tissue damage. It consists of multi-dimentional phenomenon having sensory discriminative, cognitive-evaluative and effective motivational components. Though the technology has advanced, still it is very difficult to objectively assess all the attributes of pain, including alteration in cognitive behaviour. However, subjective methods like Visual Analog Scale rating (VAS) and preliminary objective methods like pain evoked responses, behaviral monitoring and event related evoked potentials for cognition are currently in vogue. It will take some more time and effort to evolve yet other newer and sophisticated techniques to measure all aspects of pain in human beings. [References: 75]

Kvien, T. K., and K. Viktil. "Pharmacotherapy for regional musculoskeletal pain." *Best Practice & Research in Clinical Rheumatology.* 17, no. 1(2003): 137-50 UI 12659825.

Studies performed on drug therapy in regional musculoskeletal pain conditions are of varying quality, and this is related to several methodological problems. The efficacy of analgesic medications is well established from clinical practice. However, both weak and especially strong opioid analgesics are associated with adverse reactions and also with dependency and abuse. The use of anti-depressants and skeletal muscle relaxants is only weakly supported by results from controlled clinical trials. The efficacy of both systemic and topical non-steroidal anti-inflammatory drugs (NSAIDs) has been examined in several Cochrane reviews of various regional musculoskeletal pain conditions. Studies of COX-2 selective NSAIDs have not been performed in conditions with regional musculoskeletal pain, but it is assumed that COX-2 selective inhibitors will not differ from dual COX inhibitors regarding efficacy. Therefore, some of the recent controversies related to gastrointestinal safety and possible risk of myocardial infarctions are also discussed. [References: 82]

Kwon, B. K., et al. "Indications, techniques, and outcomes of posterior surgery for chronic low back pain." *Orthopedic Clinics of North America.* 34, no. 2(2003): 297-308 UI 12914269.

This article summarizes a number of issues surrounding the diagnosis, indications, and techniques of posterior lumbar spine surgery for chronic low back pain. It would not be entirely unjustified for a spine surgeon to adhere to a totally avoidant approach to chronic low back pain, rationalized by a reasonably legitimate nihilism regarding the presently available means of diagnosing and surgically managing low back pain [64]. Judging by the number of lumbar fusions performed in North America and the tremendous intellectual and financial investment currently being made in technologies to enhance spinal fusion, such an approach is evidently not achieving wide-spread acceptance on this continent. A rationale approach is

therefore required for the many low back pain sufferers with degenerative disk disease who arrive in the office having exhausted almost every imaginable form of nonoperative therapy. Every effort should be made to establish a pathoanatomic etiology of the back pain with a combination of diagnostic modalities. Surgical intervention should be approached cautiously and only after extensive dialog with the patient to establish realistic goals and expectations. Posteriorly performed interbody fusion procedures may provide a high fusion rate and satisfactory clinical outcomes for this challenging problem, although further research is necessary to determine more conclusively the role of surgery and the relative effectiveness of the various arthrodesis techniques. [References: 64]

Lazarus, J. B., and B. Downing. "Monitoring and investigating certified registered nurse practitioners in pain management." *Journal of Law, Medicine & Ethics.* 31, no. 1(2003): 101-18 UI 12762104.

Leo, R. J., C. A. Pristach, and J. Streltzer. "Incorporating pain management training into the psychiatry residency curriculum." *Academic Psychiatry.* 27, no. 1(2003): 1-11 UI 12824114.

Pain management has received increased attention from the medical community, influenced by societal demands for more effective and comprehensive treatment. In fact, the Joint Commission on Accreditation of Health Care Organizations requires that physicians consider pain as "the fifth vital sign." It requires that pain severity be documented by using a standardized pain scale. Unfortunately, the assessment and management of pain is difficult. Pain is more than a sensation; it is influenced by emotional, cognitive, and psychosocial factors. The role of the psychiatrist in managing patients with pain has received increasing attention. The American Board of Psychiatry and Neurology now offers a subspecialty certification in Pain Management. While certification is warranted for those who practice extensively in this area, the general psychiatrist should also have familiarity with those issues that are likely to arise in treating patients with pain. Toward this end, the following guidelines are proposed for pain management training to be incorporated into the residency training curriculum. [References: 108]

Malan, T. P., Jr., et al. "Inhibition of pain responses by activation of CB(2) cannabinoid receptors." *Chemistry & Physics of Lipids.* 121, no. 1-2(2002): 191-200 UI 12505700.

Cannabinoid receptor agonists diminish responses to painful stimuli. Extensive evidence demonstrates that CB(1) cannabinoid receptor activation inhibits pain responses. Recently, the synthesis of CB(2) cannabinoid receptor-selective agonists has allowed testing whether CB(2) receptor activation inhibits pain. CB(2) receptor activation is sufficient to inhibit acute nociception, inflammatory hyperalgesia, and the allodynia and hyperalgesia produced in a neuropathic pain model. Studies using site-specific administration of agonist and antagonist have suggested that CB(2) receptor agonists inhibit pain responses by acting at peripheral sites. CB(2) receptor activation also inhibits edema and plasma extravasation produced by inflammation. CB(2) receptor-selective agonists do not produce central nervous system (CNS) effects typical of cannabinoids retaining agonist activity at the CB(1) receptor. Peripheral antinociception without CNS effects is consistent with the peripheral distribution of CB(2) receptors. CB(2) receptor agonists may have promise for the treatment of pain and inflammation without CNS side effects. [References: 59]

Mallard, D. "Single checking of controlled drugs." *Professional Nurse.* 18, no. 10(2003): 544 UI 12808847.

Margo, K., J. Drezner, and D. Motzkin. "Evaluation and management of hip pain: an algorithmic approach." *Journal of Family Practice.* 52, no. 8(2003): 607-17 UI 12899815.

Start by determining whether pain is located in the anterior, lateral, or posterior hip. As the site varies, so does the etiology. Besides location, consider sudden vs insidious onset, motions and positions that reproduce pain, predisposing activities, and effect of ambulation or weight bearing. Physical examination tests that elucidate range of motion, muscle strength, and pain replication will narrow the diagnostic search. Magnetic resonance imaging is usually diagnostic if plain x-rays and conservative therapy are ineffective. Conservative measures and selective use of injection therapy are usually effective.

McNeely, M. L., G. Torrance, and D. J. Magee. "A systematic review of physiotherapy for spondylolysis and spondylolisthesis." *Manual Therapy.* 8, no. 2(2003): 80-91 UI 12890435.

The purpose of this systematic review was to assess the evidence concerning the effectiveness of physiotherapy intervention in the treatment of low back pain related to spondylolysis and spondylolisthesis. A literature search of published and unpublished articles resulted in the retrieval of 71 potential studies on the subject area. Fifty-two of the 71 articles were studies, and these studies were reviewed using preset relevance criteria. Given the inclusion and exclusion criteria chosen for this systematic review, there were very few acceptable studies and only two studies met the relevance criteria for the critical appraisal. Both studies provide evidence to suggest that specific exercise interventions, alone or in combination with other treatments, have a positive effect on low-back pain due to spondylolysis and spondylolisthesis; however, the type of exercise used was different in the two studies. In this review, very few prospective studies were found that examined the efficacy of physiotherapy on the topic area; therefore, few conclusions can be made, and further research is warranted. [References: 28]

Menendez, L., et al. "Nociceptive reaction and thermal hyperalgesia induced by local ET-1 in mice: a behavioral and Fos study." *Naunyn-Schmiedebergs Archives of Pharmacology.* 367, no. 1(2003): 28-34 UI 12616338.

The peptide endothelin-1 (ET-1) has been involved in nociception independently of its vasoconstrictor effects. We have studied the direct nociceptive behavior produced by this peptide as well as its ability to induce thermal sensitisation (as measured by the unilateral hot plate method, UHP) when intraplantarly (i.pl.) administered in mice. These behavioural measures were complemented by the quantification of Fos-protein immunoreactivity in the superficial laminae of the dorsal horn spinal neurons located ipsilateral to the injected paw.ET-1 induces licking (60-600 pmol, i.pl.) and thermal hyperalgesia (20-200 pmol, i.pl.) in the injected paw, both effects being inhibited by the coadministration of ET-1 with endothelin type A (ET(A)) receptor antagonist, BQ-123 (0.3-10 nmol), but not with endothelin type B (ET(B)) receptor antagonist, BQ-788 (10 nmol). Moreover, the licking behavior induced by ET-1 was dose-dependently inhibited by the prototypical micro -opioid agonist, morphine.The prior i.pl. administration of ET-1 (200 pmol) to mice subjected to thermal heat stimulus (55+/-1 degrees C, 10 s) increases the number of Fos-immunoreactive dorsal horn spinal neurons compared with the application of noxious heat alone. This effect is inhibited by BQ-123 (10 nmol) but not by BQ-788 (10 nmol).Thus, local ET-1 induces nocifensive behavior and thermal hyperalgesia acting through ET(A) receptors. These same receptors seem to be also involved in the amplification of Fos immunoreactivity induced by ET-1 under heat stimulus in the dorsal horn neurons. These results could help to characterize the role of ET-1 in nociceptive processing, a topic of special interest due to the pathophysiological involvement of this peptide in painful states such as cancer.

Meunier, J. C. "Utilizing functional genomics to identify new pain treatments : the example of nociceptin." *American Journal of PharmacoGenomics.* 3, no. 2(2003): 117-30 UI 12749729.

Nociceptin/orphanin FQ (noc/oFQ) is the first novel bioactive substance to have been discovered by the implementation of a functional genomics/reverse pharmacology approach. The neuropeptide was indeed identified in brain extracts as the natural ligand of a previously cloned orphan G protein-coupled receptor, the opioid receptor-like 1 (ORL1) receptor. Since its discovery in 1995, noc/oFQ has been the subject of intensive study to establish its role in normal brain function and its possible involvement in neurophysiopathology. Although the neuropeptide, an inhibitor of neuronal activity, has been found to have a wide spectrum of pharmacological effects in vivo, none has been as intensively investigated as its action on nociception and nociceptive processing. There is now substantial evidence that noc/oFQ has a modulatory role in nociception. However, dependent on the dose and site of injection, and possibly the animal's genetic background and even psychological status, the peptide has been variously reported to cause allodynia, hyperalgesia, analgesia, and even pain, in rodents. Overall, noc/oFQ tends to facilitate pain when administered supraspinally, and to inhibit it when administered spinally. These opposing effects beg the obvious, yet still unanswered, question as to what would be the net effect on nociception of an ORL1 receptor ligand, agonist or antagonist, able to target supraspinal and spinal sites simultaneously. Owing to the research effort of several drug companies, such ligands, i.e. nonpeptidic, brain-penetrating agonists and antagonists, have recently been produced whose systematic screening in animal models of acute and inflammatory pain may help validate the ORL1 receptor as the target for novel, non-opioid analgesics. [References: 182]

Mokri, B. "Headaches caused by decreased intracranial pressure: diagnosis and management." *Current Opinion in Neurology.* 16, no. 3(2003): 319-26 UI 12858068.

PURPOSE OF REVIEW: More patients with spontaneous intracranial hypotension are now being diagnosed, and it is realized that most cases result from spontaneous cerebrospinal fluid leaks. A broader clinical and imaging spectrum of the disorder is recognized. This paper reviews new insights into the variability of clinical manifestations, imaging features, etiological factors, anatomy of leaks, and implications of these in patient management. RECENT FINDINGS: Spontaneous intracranial hypotension should not be equated with post-lumbar puncture headaches. In a substantial minority of patients, headaches are not orthostatic and may mimic other types of headache. Additional diverse neurological manifestations may dominate the clinical picture and patients may occasionally have no headache at all. Reports on unusual presentations of the disorder continue to appear in the literature. Furthermore, additional imaging features of cerebrospinal fluid leaks are recognized. High-flow and slow-flow leaks may present diagnostic challenges, and require modification of diagnostic studies aimed at locating the site of the leak. Stigmata of connective tissue abnormality, especially abnormalities of fibrillin and elastin, are seen in a notable minority of patients, pointing to weakness of the dural sac as one of the etiological factors. After treatment of spontaneous intracranial hypotension, surgically or by epidural blood patch, a rebound and self-limiting intracranial hypertension may sometimes develop. SUMMARY: In the past decade, interest in spontaneous intracranial hypotension has been rekindled, with a substantial growth of knowledge on various aspects of the disorder. We are in the learning phase, and new information will probably appear in the future, with notable diagnostic and therapeutic implications. [References: 70]

Myers, J. "Myths of prehospital analgesia." *Journal of Emergency Medical Services.* 28, no. 6(2003): 72-3 UI 12792596.

Narvani, A. A., et al. ""Pig Tail" technique in intradiscal electrothermal therapy." *Journal of Spinal Disorders & Techniques.* 16, no. 3(2003): 280-4 UI 12792343.

To describe a new method of catheter insertion in intradiscal electrothermal therapy, which eliminates the need for reinsertion of the cannula and catheter from the contralateral side in those patients in whom optimal positioning is not achieved with the standard technique. This new technique has not been described before. In those patients in whom adequate catheter position cannot be achieved with the standard technique, instead of withdrawing the cannula after the initial treatment, we recommend rotating the cannula 180 degrees through its long axis. This will allow the catheter to hit the anterior anulus and deflect backwards toward the cannula. It can then be negotiated across the midline to adequately thermally treat the whole posterior anulus. We have performed our technique in 42 consecutive patients in whom initial navigation was difficult. This new method proved to be simple and did not cause patients additional discomfort. The "pig tail" technique is safe and effective in intradiscal electrothermal therapy of those patients with difficult navigation. It avoids the need for second needle insertion, therefore avoiding the use of more local anesthesia, further discomfort for the patient, and additional radiographic exposure.

Nesbit, R. R., Jr. "Diagnosing appendicitis.[comment]." *Gastroenterology.* 125, no. 1(2003): 272 UI 12870493.

Noah, L. "Challenges in the federal regulation of pain management technologies." *Journal of Law, Medicine & Ethics.* 31, no. 1(2003): 55-74 UI 12762102.

Patrick, D. L., et al. "National Institutes of Health State-of-the-Science Conference Statement: Symptom Management in Cancer: Pain, Depression, and Fatigue, July 15-17, 2002." *Journal of the National Cancer Institute.* 95, no. 15(2003): 1110-7 UI 12902440.

BACKGROUND: Despite advances in early detection and effective treatment, cancer remains one of the most feared diseases. Among the most common side effects of cancer and treatments for cancer are pain, depression, and fatigue. Although research is producing increasingly hopeful insights into the causes and cures for cancer, efforts to manage the side effects of the disease and its treatments have not kept pace. The challenge that faces us is how to increase awareness of the importance of recognizing and actively addressing cancer-related distress. The National Institutes of Health (NIH) convened a State-of-the-Science Conference on Symptom Management in Cancer: Pain, Depression, and Fatigue to examine the current state of knowledge regarding the management of pain, depression, and fatigue in individuals with cancer and to identify directions for future research. Specifically, the conference examined how to identify individuals who are at risk for cancer-related pain, depression, and/or fatigue; what treatments work best to address these symptoms when they occur; and what is the best way to deliver interventions across the continuum of care. State-of-the-Science Process: A non-advocate, non-Federal, 14-member panel of experts representing the fields of oncology, radiology, psychology, nursing, public health, social work, and epidemiology prepared the statement. In addition, 24 experts in medical oncology, geriatrics, pharmacology, psychology, and neurology presented data to the panel and to the conference audience during the first 1.5 days of the conference. The panel then prepared its statement, addressing the five predetermined questions and drawing on submitted literature, the speakers' presentations, and discussions held at the conference. The statement was presented to the conference audience, followed by a press conference to allow the panel to respond to questions from the media.

After its release at the conference, the draft statement was made available on the Internet. The panel's final statement is available at http://consensus.nih.gov. CONCLUSIONS: The panel concluded that the available evidence supports a variety of interventions for treating cancer patients' pain, depression, and fatigue. Clinicians should routinely use brief assessment tools to ask patients about pain, depression, and fatigue and to initiate evidence-based treatments. Assessment should include discussion about common symptoms experienced by cancer patients, and these discussions should continue over the duration of the illness. Impediments to effective symptom management in cancer patients can arise from different sources and interactions among providers, patients and their families, and the health care system. Numerous factors could interfere with adequate symptom management. Among these factors are incomplete effectiveness of some treatments, a lack of sufficient knowledge regarding effective treatment strategies, patient reluctance to report symptoms to caregivers, a belief that such symptoms are simply a part of the cancer experience that must be tolerated, and inadequate coverage and reimbursement for some treatments. Additional research is needed on the definition, occurrence, the treatment of pain, depression, and fatigue, alone and in combination, in adequately funded prospective studies. The panel also concluded that the state of the science in cancer symptom management should be reassessed periodically. [References: 0]

Peana, A. T., et al. "(-)-Linalool produces antinociception in two experimental models of pain." *European Journal of Pharmacology.* 460, no. 1(2003): 37-41 UI 12535857.

Linalool is a monoterpene compound commonly found as a major component of the essential oils of several aromatic plant species, many of which are used in traditional medical systems as analgesic and anti-inflammatory remedies. We previously reported that (-)-linalool, the natural occurring enantiomer, plays a major role in the anti-inflammatory activity displayed by different essential oils, suggesting that linalool-producing species are potentially anti-inflammatory agents. In this study, the antinociceptive activity of (-)-linalool was examined in two different pain models in mice: the acetic acid-induced writhing response, a model of inflammatory pain, and the hot plate test, a model of supraspinal analgesia. Moreover, the effect of (-)-linalool on spontaneous locomotor activity (25, 50, 75 and 100 mg/kg) was evaluated. The results show that this compound induced a significant reduction of the acid-induced writhing at doses ranging from 25 to 75 mg/kg. Such effect was completely reversed both by the opioid receptor antagonist naloxone and by the unselective muscarinic receptor antagonist atropine. In the hot plate test, only the dose of 100 mg/kg of (-)-linalool resulted in a significant effect. (-)-Linalool induced a dose dependent increase of motility effects, thus ruling out the confounding influence of a possible sedative effect. The more pronounced effect of (-)-linalool on the writhing test with respect to the hot plate test is consistent with the observation that (-)-linalool possesses anti-inflammatory activity. Finally, the activation of opioidergic and cholinergic systems appears to play a crucial role in (-)-linalool-induced antinociception.

Prasanna, A. "Neuropathic pain and sympathetic nerve blocks." *Middle East Journal of Anesthesiology.* 17, no. 1(2003): 119-30 UI 12754777.

Pullen, R. L., Jr. "Managing I.V. patient-controlled analgesia." *Nursing.* 33, no. 7(2003): 24 UI 12862014.

Raju, B. S., and N. K. Rao. "The current practice of percutaneous transluminal coronary angioplasty (PTCA) and stent deployment and their long-term results in

unstable and stable angina." *Journal of the Indian Medical Association.* 101, no. 2(2003): 66-70 UI 12841485.

Percutaneous transluminal coronary angioplasty with stent implantation is a universally accepted therapeutic option for patients with coronary artery disease. Since introduction in 1977, angioplasty techniques have been greatly improved; the availability of better hardware, greater operator experience, better patient selection and the judicious use of adjunctive therapy like heparin, clopidogrel, platelet receptor antagonists like abciximab and the use of atherectomy/rotablator in given situations has greatly improved procedural outcome today. Angioplasty alleviates symptoms in patients with stable angina and also in unstable angina especially in high risk patients like those with pulmonary oedema, cardiogenic shock or patients refractory to conventional modes of therapy, though cost may be a prohibiting factor. The outcome of angioplasty in diabetic patients is universally poor and bypass surgery is always a better option. Women with coronary artery disease tend to have complex lesions with a sub-optimal outcome and a higher incidence of restenosis. Use of abciximab is always beneficial in both men and women. [References: 0]

Rollins, G. "Rapid MRI no better than X-ray in the treatment of low back pain." *Report on Medical Guidelines & Outcomes Research.* 14, no. 13(2003): 1, 6-7 UI 12918516.

Rosenblatt, W. B. "A "splash" twist to a painless breast augmentation.[comment]." *Plastic & Reconstructive Surgery.* 112, no. 2(2003): 715 UI 12900662.

Rueter, L. E., et al. "Peripheral and central sites of action for A-85380 in the spinal nerve ligation model of neuropathic pain." *Pain.* 103, no. 3(2003): 269-76 UI 12791433.

Neuronal nicotinic receptor (NNR) agonists such as ABT 594 have been shown to be effective in a wide range of preclinical models of acute and neuropathic pain. The present study, using the NNR agonist A-85380, sought to determine if NNR agonists are acting via similar or differing mechanisms to induce anti-nociception and anti-allodynia. A systemic administration of the quaternary NNR antagonist chlorisondamine (0.4 micromol/kg, intraperitoneal (i.p.)) did not alter A-85380-induced (0.75 micromol/kg, i.p.) anti-nociception in the rat paw withdrawal model of acute thermal pain. In contrast, previous studies have demonstrated that blockade of central NNRs by prior administration of chlorisondamine (10 microg i.c.v.) prevents A-85380 induced anti-nociception indicating a predominantly central site of action of NNR agonists in relieving acute pain. In the rat spinal nerve ligation model of neuropathic pain, A-85380 induced a dose-dependent anti-allodynia (0.5-1.0 micromol/kg) that was blocked by pretreatment with mecamylamine (1 micromol/kg). Interestingly, unlike acute pain, both systemic and central administration of chlorisondamine blocked A-85380-induced anti-allodynia, an effect that was determined not to be due to a non-specific effect of chlorisondamine or to chlorisondamine crossing the blood-brain barrier. The peripheral site of action was shown not to be the primary receptive field, since A-85380 had equally potent anti-allodynic effects when it was injected into either the affected or unaffected paw. In contrast, infusion of A-85380 directly onto the L5 dorsal root ganglion on the affected side resulted in a dose-dependent and marked anti-allodynia (10-20 microg) at doses that had no effect when injected systemically. This effect was blocked by pretreatment with chlorisondamine. Together these data further support the idea that different mechanisms underlie different pain states and suggest that the effects of NNR agonists in neuropathic pain may be due in part to peripheral actions of the compounds.

Ryan, R. "Palliative care and terminal illness." *The National Catholic Bioethics Quarterly.* 1, no. 3(2001): 313-20 UI 12866519.

Sagi, H. C., Q. B. Bao, and H. A. Yuan. "Nuclear replacement strategies." *Orthopedic Clinics of North America.* 34, no. 2(2003): 263-7 UI 12914266.

Although still a technology in its infancy, nuclear replacement promises a potential alternative to arthrodesis for patients with discogenic back pain. It is ideally suited to those patients presenting early in the degenerative cascade with minimal to no arthritic changes or disc collapse. The physical nature of the implants seeks to restore the visco-elastic, biomechanical, and fluid characteristics of the natural disc, thus reducing pain while maintaining motion and function. [References: 41]

Sartor, O. "Radioisotopic treatment of bone pain from metastatic prostate cancer." *Current Oncology Reports.* 5, no. 3(2003): 258-62 UI 12667425.

Hormone-refractory prostate cancer patients with painful bony metastatic lesions are potential candidates for bone-seeking radiopharmaceutical therapies. After careful assessment of symptoms and localization of pain, a bone scan is the single most useful imaging modality for the clinician to assess patients for the presence and distribution of osteoblastic lesions. Increased uptake (compatible with bony metastases) on a conventional bone scan is currently a prerequisite for treating patients with a bone-targeted therapeutic isotope. Determining whether metastatic bony involvement is focal or diffuse is also important in the clinical decision-making process. Patients with multifocal metastatic disease are excellent candidates for systemic therapies, whereas patients with unifocal metastatic disease may be more appropriate candidates for focal therapies such as external-beam radiation. Patients who are poorly tolerant of narcotics should be actively considered for alternative treatments such as systemic radiopharmaceuticals. Contraindications to administration of current bone-seeking radioisotopes include substantial degrees of renal insufficiency or bone marrow suppression. [References: 14]

Schaufele, M. K., and S. D. Boden. "Outcome research in patients with chronic low back pain." *Orthopedic Clinics of North America.* 34, no. 2(2003): 231-7 UI 12914262.

Outcome research in chronic low-back pain is entering a new phase. In the past several years, several outcome measures have been evaluated for their psychometric properties, and databases for patients with low-back pain exist for some of them. A set of recommended and standardized outcome measures and questionnaires is now available for the different outcome domains. The use of computerized versions of these questionnaires will allow simplified data collection and analyses, which will not only help to formulate a more uniform design of research trials, but can be useful for clinicians interested in documenting multi-dimensional outcomes in their patient population. [References: 25]

Shannon, K., and T. Bucknall. "Pain assessment in critical care: what have we learnt from research." *Intensive & Critical Care Nursing.* 19, no. 3(2003): 154-62 UI 12765635.

Despite an ongoing acknowledgement in the literature that pain is a significant problem within the critical care environment, this issue has not been adequately addressed by critical care nurses. This paper examines strategies for changing pain management practices in critical care, including reviewing documentation practices, the utilisation of guidelines and algorithms to augment clinical decision making, and increasing educational opportunities available to critical care nurses. It is recommended that pain assessment be given a higher priority within the clinical context, particularly as inadequate pain assessment and management has been linked to increased morbidity and mortality within critical care. Importantly, critical

care nurses need to not only be aware of research-based pain management practices, but also lead the way in implementation and continuous evaluation as a measure of decreasing patient pain in the future.

Singh, B. N. "Classes of antianginal compounds: old and new--therapeutic implications.[comment]." *Journal of Cardiovascular Pharmacology & Therapeutics.* 8, no. 2(2003): 85-8 UI 12808481.

Singh, D., and D. H. Kennedy. "The use of gabapentin for the treatment of postherpetic neuralgia." *Clinical Therapeutics.* 25, no. 3(2003): 852-89 UI 12852705.

BACKGROUND: Varicella-zoster virus causes chickenpox and can reemerge later in life to cause herpes zoster or shingles. One of the most common and disabling complications of herpes zoster is postherpetic neuralgia (PHN). OBJECTIVES: This article reviews the current primary literature about the efficacy and tolerability of gabapentin for the treatment of PHN. Gabapentin pharmacokinetics and drug interactions are also reviewed. METHODS: A literature search in the English language was conducted using OVID Web, which contained the following databases: MEDLINE (1966-present), EMBASE (1980-2002), Current Contents/Clinical Medicine (1999-2002), Cochrane Controlled Trials Register (1898-present), Cochrane Database of Systemic Reviews (fourth quarter, 2002), and International Pharmaceutical Abstracts (1970-2002). Search terms used were postherpetic neuralgia; zoster; gabapentin; neuropathic pain; pain; pharmacoeconomic; cost; controlled clinical trial; randomized, controlled trial; postherpetic neuralgia and gabapentin; gabapentin and pain; treatment and postherpetic neuralgia; gabapentin and age; gabapentin and gender; gabapentin and ethnicity; and gabapentin and pharmacokinetics. RESULTS: Gabapentin displays nonlinear absorption kinetics, is minimally protein bound (< 3%), has a high mean (SD) volume of distribution (50.4 [8.0] L), and is excreted via the kidneys as unchanged drug. Two randomized, placebo-controlled, parallel-group, multicenter clinical trials demonstrated the effectiveness of gabapentin at doses of up to 3600 mg/d to significantly reduce pain ($P < 0.01$ and $P < 0.001$), improve sleep ($P < 0.01$), and improve some parameters on the Short Form-McGill Pain Questionnaire ($P < 0.05$). Dizziness and somnolence were the most common side effects leading to withdrawal from the trials. The recommended dosage in adults is 300 mg at bedtime on day 1,300 mg BID on day 2, and 300 mg TID on day 3, titrating up as needed to 2400 to 3600 mg/d. To reduce adverse events in patients with renal impairment, the dose should be adjusted based on the patient's creatinine clearance. CONCLUSIONS: Gabapentin appears to be effective and well tolerated for the short-term treatment of PHN. However, future controlled studies are needed to determine whether the effectiveness of gabapentin for PHN is maintained for > 2 months, to establish the optimal dose of gabapentin for PHN, and to compare the efficacy of gabapentin with that of other pharmacologic agents used for the treatment of PHN. [References: 100]

Speed, C. A. "Injection therapies for soft-tissue disorders." *Best Practice & Research in Clinical Rheumatology.* 17, no. 1(2003): 167-81 UI 12659827.

Local injection therapies are used in the management of a variety of musculoskeletal pain syndromes and include the local infiltration of substances such as corticosteroid and/or anaesthetic, dry needling and neural blockade. Although commonly used, the rationale for their use in many conditions is arguable and evidence of efficacy is often lacking. In this chapter, a number of common injection therapies for soft-tissue-mediated pain are described. The reasoning for their use, potential mechanisms of action and unwanted effects are discussed. The literature relating to their documented effects is critically reviewed. Practical suggestions for

their utilization in the management of soft-tissue conditions are given and proposals are made for future research in this important area. [References: 70]

Storer, R. J., S. Akerman, and P. J. Goadsby. "Characterization of opioid receptors that modulate nociceptive neurotransmission in the trigeminocervical complex." *British Journal of Pharmacology.* 138, no. 2(2003): 317-24 UI 12540522.

1. Opioid agonists have been used for many years to treat all forms of headache, including migraine. We sought to characterize opioid receptors involved in craniovascular nociceptive pathways by in vivo microiontophoresis of micro -receptor agonists and antagonists onto neurons in the trigeminocervical complex of the cat. 2. Cats were anaesthetized with alpha-chloralose 60 mg kg(-1), i.p. and 20 mg kg(-1), i.v. supplements after induction and surgical preparation using halothane. Units were identified in the trigeminocervical complex responding to supramaximal electrical stimulation of the superior sagittal sinus, and extracellular recordings of activity made. 3. Seven- or nine-barrelled glass micropipettes incorporating tungsten recording electrodes in their centre barrels were used for microiontophoresis of test substances onto cell bodies. 4. Superior sagittal sinus (SSS)-linked cells whose firing was evoked by microiontophoretic application of L-glutamate (n=8 cells) were reversibly inhibited by microiontophoresis of H(2)N-Tyr-D-Ala-Gly-N-Me-Phe-Gly-ol (DAMGO) (n=12), a selective micro -receptor agonist, in a dose dependent manner, but not by control ejection of sodium or chloride ions from a barrel containing saline. 5. The inhibition by DAMGO of SSS-linked neurons activated with L-glutamate could be antagonized by microiontophoresis of selective micro -receptor antagonists D-Phe-Cys-Tyr-D-Trp-Orn-Thr-Pen-Thr-NH(2) (CTOP) or D-Phe-Cys-Tyr-D-Trp-Arg-Thr-Pen-Thr-NH(2) (CTAP), or both, in all cells tested (n=4 and 6, respectively). 6. Local iontophoresis of DAMGO during stimulation of the superior sagittal sinus resulted in a reduction in SSS-evoked activity. This effect was substantially reversed 10 min after cessation of iontophoresis. The effect of DAMGO was markedly inhibited by co-iontophoresis of CTAP. 7. Thus, we found that micro -receptors modulate nociceptive input to the trigeminocervical complex. Characterizing the sub-types of opioid receptors that influence trigeminovascular nociceptive transmission is an important component to understanding the pharmacology of this synapse, which is pivotal in primary neurovascular headache.

Sutherland, F., et al. "Elevated serum interleukin 6 levels in patients with acute intestinal ischemia." *Hepato-Gastroenterology.* 50, no. 50(2003): 419-21 UI 12749237.

BACKGROUND/AIMS: Early diagnosis of patients with acute intestinal ischemia may be possible by measuring serum cytokine levels. METHODOLOGY: Forty-six patients presenting in emergency with an acute abdomen where intestinal ischemia was a possible diagnosis were evaluated. A single blood sample was collected in emergency prior to any intervention and the patients were then followed prospectively. Serum tumor necrosis factor-alpha and interleukin-6 levels were determined at a later date. Serum levels in patients with proven acute intestinal ischemia were compared to patients with other diagnoses. RESULTS: Serum tumor necrosis factor-alpha levels were moderately increased in patients with acute intestinal ischemia compared to controls 96.9 +/- 98.9 pg/mL vs. 60.8 +/- 63.7 pg/mL, P = 0.16. Serum interleukin-6 levels were significantly increased in patients with acute intestinal ischemia, 15.778 +/- 21.349 pg/mL vs. 2.844 +/- 5.625 pg/mL, P = 0.01. CONCLUSIONS: Serum interleukin-6 levels may prove useful in diagnosing patients with acute intestinal ischemia.

Teschemacher, H. "Lactoferrin elicits opioid-mediated antinociception without development of tolerance: central nNOS-1 set off duty?[comment]." *American*

Journal of Physiology - Regulatory Integrative & Comparative Physiology. 285, no. 2(2003): R302-5 UI 12855413.

Vanegas, H., and V. Tortorici. "Opioidergic effects of nonopioid analgesics on the central nervous system." *Cellular & Molecular Neurobiology.* 22, no. 5-6(2002): 655-61 UI 12585685.

1. The analgesic effect of nonsteroidal anti-inflammatory drugs (NSAIDs) is partly due to the fact that they act upon the periaqueductal gray matter (PAG) and the rostral ventromedial medulla of the brain stem and thus activate the descending pain-control system, which inhibits nociceptive transmission at the spinal dorsal horn. 2. The analgesic action of dipyrone (metamizol) and of lysine-acetylsalicylate (LASA), two well-known NSAIDs. whether microinjected into the PAG or given systemically, can be reverted by naloxone. Repeated administration of dipyrone or LASA induces tolerance to their antinociceptive effect, with cross-tolerance to morphine, and a withdrawal syndrome upon naloxone administration. Dipyrone tolerance can be reverted by proglumide, a cholecystokinin antagonist. 3. These findings reveal a close association between the central action of NSAIDs and endogenous opioids. [References: 21]

von Lindern, J. J., et al. "Type A botulinum toxin in the treatment of chronic facial pain associated with masticatory hyperactivity." *Journal of Oral & Maxillofacial Surgery.* 61, no. 7(2003): 774-8 UI 12856249.

PURPOSE: Chronic hyperactivity of the masticatory muscles is a common functional disorder associated with chronic facial pain and headache. The positive therapeutic effect of botulinum toxin type A on functional disorders and pain symptoms has been known in connection with the treatment of cervical dystonia. The purpose of this report is to assess whether the targeted reduction of masticatory muscular hyperactivity by local injection treatment with botulinum toxin type A can improve facial pain headache symptoms in the event that other treatment methods prove ineffective. Materials and Methods: In an randomized blinded placebo-controlled study, 90 patients (60 verum and 30 placebo) with chronic facial pain were treated with botulinum toxin type A (Botox; Allergan, Ettlingen, Germany) injections into masticatory muscles. RESULTS: Ninety-one percent of patients who received botulinum toxin improved by a significant mean reduction of approximately 3.2 on a visual analog pain scale. By comparison with t test and chi(2) test, there was a significant difference compared with the placebo group (P <.01). CONCLUSIONS: The local injection of botulinum toxin type A constitutes an innovative and adequately efficient treatment method for chronic facial pain associated with hyperactivity of the masticatory muscles. An improvement in the painful symptoms can be expected in up to 90% of patients who do not respond to conservative treatment methods.

Ward, J. B. "Greater occipital nerve block." *Seminars in Neurology.* 23, no. 1(2003): 59-62 UI 12870106.

The occipital nerve block is used to diagnose and treat occipital neuralgia. The clinical presentation of occipital neuralgia, the anatomy of the greater occipital nerve, and the technique of the occipital nerve block is described. [References: 4]

Warsi, A., et al. "Arthritis self-management education programs: a meta-analysis of the effect on pain and disability." *Arthritis & Rheumatism.* 48, no. 8(2003): 2207-13 UI 12905474.

OBJECTIVE: Some reports suggest that education programs help arthritis patients better manage their symptoms and improve function. This review of the published literature was undertaken to assess the effect of such programs on pain and disability. METHODS: Medline and HealthSTAR were searched for the period 1964-

1998. The references of each article were then hand-searched for further publications. Studies were included in the meta-analysis if the intervention contained a self-management education component, a concurrent control group was included, and pain and/or disability were assessed as end points. Two authors reviewed each study. The methodologic attributes and efficacy of the interventions were assessed using a standardized abstraction tool, and the magnitude of the results was converted to a common measure, the effect size. Summary effect sizes were calculated separately for pain and disability. RESULTS: The search strategy yielded 35 studies, of which 17 met inclusion criteria. The mean age of study participants was 61 years, and 69% were female. On average, 19% of patients did not complete followup (range 0-53%). The summary effect size was 0.12 for pain (95% confidence interval [95% CI] 0.00, 0.24) and 0.07 for disability (95% CI 0.00, 0.15). Funnel plots indicated no significant evidence of bias toward the publication of studies with findings that showed reductions in pain or disability. CONCLUSION: The summary effect sizes suggest that arthritis self-management education programs result in small reductions in pain and disability.

Watson, D., S. Lipscombe, and T. Rees. "Headache in primary care." *British Journal of General Practice.* 53, no. 490(2003): 406 UI 12830572.

Wright, J., et al. "Effectiveness of multifaceted implementation of guidelines in primary care." *Journal of Health Services & Research Policy.* 8, no. 3(2003): 142-8 UI 12869339.

OBJECTIVE: To evaluate the effectiveness of a tailored and multifaceted approach to the implementation of nationally recommended and evidence-based guidelines in primary care within existing systems and resources. METHODS: A non-randomised Latin square to compare guideline implementation in two neighbouring health districts covering 180 general practices. Evidence-based guidelines for the treatment of patients with asthma and angina were implemented actively in one district and passively disseminated in the other district. Outcome measures for asthma were smoking status and inhaler technique. For angina the outcome measures were: smoking status; blood pressure; aspirin prescribed, contraindicated or self-medicated; beta-blocker prescribed or contraindicated; routine hospital admission; prescribed drugs; self-reported change. RESULTS: There were improvements in all outcome criteria between baseline and follow-up audits, regardless of whether the guideline was actively implemented or passively disseminated. The estimated increase in the proportion of records complying with guidelines was 4% [95% confidence intervals (CI): 0, 8] and was higher in intervention than in control practices. Using only records not compliant at baseline, the corresponding difference was 15% (95% CI: 7, 24). The only significant improvement associated with active implementation was smoking status in angina patients. Both prescribing and hospital admission monthly totals changed during the period of the trial, but there was no significant difference between the pattern of changes in intervention and control districts. A significantly greater proportion of health professionals saw the intervention guideline compared with the control (75% versus 25%). There was a significant correlation between self-reported change and interventions steps ($P < 0.05$). CONCLUSIONS: Increases in quality markers occurred irrespective of the multifaceted implementation efforts. Some of this increase was due to the method of data collection. Nevertheless, national initiatives may have more influence than local implementation initiatives.

Yamamoto, T., et al. "Anti-mechanical allodynic effect of intrathecal and intracerebroventricular injection of orexin-A in the rat neuropathic pain model." *Neuroscience Letters.* 347, no. 3(2003): 183-6 UI 12875916.

Orexin-A has been reported to produce an analgesic effect in the hot plate test and in the inflammatory pain models. In the present study, the authors examined the effect of orexin-A on the mechanical allodynia induced by partial sciatic nerve ligation (a model of neuropathic pain) in the rat. Partial sciatic nerve ligation is created by tight ligation of one-third or one-half of the right sciatic nerve. Orexin-A was administered intrathecally or intracerebroventricularly 7 days after a partial sciatic nerve injury. Either intrathecal or intracerebroventricular injection of orexin-A attenuated the level of mechanical allodynia induced by partial sciatic nerve ligation. These data suggest that either intrathecal or intracerebroventricular injection of orexin-A is a new therapeutic approach to treating mechanical allodynia caused by nerve injury.

Zeilhofer, H. U., and G. Calo. "Nociceptin/orphanin FQ and its receptor--potential targets for pain therapy?" *Journal of Pharmacology & Experimental Therapeutics.* 306, no. 2(2003): 423-9 UI 12721334.

The neuropeptide nociceptin, also called orphanin FQ (N/OFQ), is the endogenous agonist of the N/OFQ peptide receptor (NOP receptor). Both N/OFQ and the NOP receptor share a high degree of homology with classical opioid peptides and opioid receptors, respectively, and use similar signal transduction pathways as classical opioids. The NOP receptor has thus been regarded as the fourth member of the opioid receptor family. Despite this close relationship, 7 years of research have demonstrated that the N/OFQ system has a distinct pharmacological profile and serves different physiological functions. In particular, its role in the control of pain and analgesia at different levels of integration appears quite different from that of classical opioids. The recent development of specific antagonists at the NOP receptor and of NOP receptor or N/OFQ precursor knock-out mice have generated new insights into the role of N/OFQ in pain processing and help to evaluate the N/OFQ-NOP system as a potential target for new analgesic drugs.

Ziegler, S. J., and N. P. Lovrich, Jr. "Pain relief, prescription drugs, and prosecution: a four-state survey of chief prosecutors." *Journal of Law, Medicine & Ethics.* 31, no. 1(2003): 75-100 UI 12762103.